

TbT. Thesis

HISTORY AND METHOD OF OPERATION  
OF COPPER MINES AT BARE HILLS  
NEAR BALTIMORE, MD.

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SUMMARY

One of the first mines opened in this country with the purpose of producing copper was the mine at Bare Hills, Maryland. The mine produced small amounts of copper ore. At the start of the Revolutionary War, the mine ceased operations and remained closed until the year 1845 when operations were resumed on a small scale. The mine started operations of a large scale in the year 1866 and continued operating with a large output until 1886 at which year the mine was closed because of certain factors which made operations difficult. In 1900, new machinery was installed and the mine was reopened and operated until 1902. Since that time it has been ready to operate at several times but has never actually been operated.

The Bare Hill mine, while not running now, has considerable promise of ore; but the low price of copper, the smallness of the deposit and the cost of equipping the mine with modern machinery will probably keep the mine closed forever.



## EARLY HISTORY

That Maryland was early explored for mineral wealth is shown by a report on the Province, made in December, 1748, by the Governor and Council to the London Board of Trade. After the discovery of copper ore at Bare Hills, a Mr. Jonathon Sleeman, a Cornishman, bought the land with the intention of opening a "surface" mine. This project was soon abandoned, very little ore supposedly having been removed.

The mine was reopened by Thomas Petherick about 1845, but was soon abandoned by him and taken up by a Mr. Davis. Petherick had taken the mine from the owners under a Cornish lease for twenty-one years, the lease being of the same type that has been used for centuries in England. He sold this lease to Isaac Tyson, Jr., a man who was attempting to control all of the mines in Maryland. When Davis' lease expired, Tyson endeavored to hold the property under this Cornish lease but after a long and hard-fought lawsuit, the decision was finally rendered that this form of lease was not binding. The decision was due to technical points in the construction of the lease and the property went back to the original owners. After passing through several hands, the property came into the control of the Bare Hill Mining Company.

### THE BARE HILL MINING COMPANY

The mines had been worked previously to 1864, but in that year the company began its most active operations. The officers of the company were William H. Keener, president, and Dr. A. F. Dulin, J. Hall Pleasants, John W. McConkey, C. Oliver O'Donnell, and George T. Coulter, directors. The capital stock was \$500,000. in 100,000 shares. Few mining companies have commenced operations under circumstances so favorable as those which characterized the Bare Hill Co.

The richness of the vein was shown in the statement of an expert, who reported that in the 600' level the ore was 180' long, 60' high, and 3' thick. The dimensions in the 500' level were 30' by 80' by 2 1/2', and in the 450' level 80' by 30' by 2 1/2'. At this time there was in sight 1800 tons of ore, worth at ruling prices \$140,000. and the engineer added that his only regret was "to find a mine, with such masses of ore exposed, worked on too small a scale, and to meet a few miners where scores could find profitable employment". Another engineer calculated that \$9,000. worth of ore per month could be sent to the market, and more recent investigators have given the opinion that the richest and largest deposits have never really been touched.

### OUTPUT OF THE MINE

According to Dr. Lehmann, of Baltimore, this mine was operated almost continuously from 1866 to 1886, the entire output going to the Baltimore Copper Works, the



sampling and assaying of the ore being under Dr. Lehmann's supervision. The records of both his office and of the copper company were destroyed by the great Baltimore fire, but the old samples, labels, and memoranda at hand enabled him to give the following rough estimate of the total output.

Prior to 1866, the yearly shipments varied between 2,000 and 2,500 tons of 15 to 20 percent ore. From 1866 to 1876 the annual output was from 800 to 1200 tons of "cobbed" ore, averaging 18 percent copper, with 1,000 to 1,500 tons of "hutchd" ore or concentrates. From 1876 to 1886 the shipments gradually lessened, being about 50 tons a month of 18 percent "cobbed" ore from 1883 to 1886. Taking the average of these figures, the total output from 1866 to 1886 is about 32,500 tons of 18 percent material. At 15 cents a pound for copper, this represents a gross valuation of \$54. per ton, or a total value of \$1,755,000. According to the Tenth Census, the mine in 1880 yielded 17 tons of concentrates, from which 1,275 pounds of copper were produced.

The mines were profitably operated until 1886, when legislation by Congress in the special interest of the companies owning the Lake Superior Copper-Mines forced the Bare Hill corporation to suspend work.

#### LATER HISTORY

The mine was not in operation for the 15 years between 1886 and 1900. At the last named date a stock

company was formed to reopen the property, new machinery was installed and the mine was unwatered. The mine was reopened to fill an order for copper sheathing for a fleet of ships operating to and from Baltimore. After the order was filled, there being no further orders in sight, the property was sold under a deed of trust.

In 1905 the mine was in the possession of Mr. Herbert Brown, who was preparing to unwater and work the property. Having no orders in sight, Brown sold the mine to a Mr. Hill who left the mine to its present owner, Miss Elizabeth Hill.

#### THE ORE

The deposit, according to old descriptions, was in a vein which carries calcopyrite, bornite, and magnetite. Unfortunately the material on the mine dump has so succumbed to attacks of the weather that ore and gangue minerals sufficiently fresh for microscopic study could not be obtained.

The deposit occurs in a general region of hornblende schist, probably an altered gabbro. The 2 to 5' vein is an interbanded layer of amphibole in gray gneiss. The gangue is black amphibole schist. A few hundred yards to the east lies a small serpentine mass that has been intruded into the schist. The ore is apparently in a vein conforming in strike to the schistosity of the rocks. The vein shows movement and crushing.



## OPERATION

Prior to the finding of the richer deposits of Michigan, Arizona, and Montana, Maryland ores were sufficiently significant to make the state of some importance as a copper producer. Very little ore was actually removed from the Bare Hills mine prior to 1864. At this time the Bare Hill Mining Company started its operations.

The machinery at that time was very crude, assays were unreliable, and had to be worked in a semi-rural way, the miners farming during good weather and mining during bad.

The ore vein, having an average thickness of 5' and said to have yielded 11 1/2 percent copper, had been developed by an incline shaft following down the dip of 45 degrees to a depth along the incline of 832 feet. The main shaft was braced with 8" by 8" timber at frequent intervals by ordinary methods of bracing. Two other shafts were used for ventilation. Drifts were run at frequent intervals and the ore removed from the drifts was carried to the main shaft where it was dumped into small carts. The carts ran on small tracks, about 2 feet wide, the power necessary to pull them out of the mines being furnished by mules.

The material taken from the mine was crushed and the copper ore removed from the gangue. The ore also



contained small amounts of gold and silver but it was not known at the time. It is an often told story that the slag left over, after the copper was removed, was used to build houses for the workers of the Baltimore Copper Works at Canton. When it became known that the ore contained gold and silver, the houses were demolished and the valuables removed.

Production continued until 1886, when the mine was closed because of reasons mentioned before.

When the stock company took over the property in 1900, it equipped the mine with all necessary surface buildings, boilers, an air compressor, an old-fashioned hoisting engine, a Cornish pump, and a crusher.

With the introduction of the new equipment, the mine was operated with a much greater efficiency. Practically all of the intervening ore between the drifts was stoped out. The material was removed from the mine in the same manner as described before, by mules pulling the carts out. Other shafts, much smaller, were sunken in the same vicinity but no trace of these could be found.

The Cornish pump was used to unwater the mines. Then all of the material that was mined was run through the crusher, the copper bearing minerals then being removed and the gangue minerals being dumped on the dump heap. This company continued just as the Bare Hill Mining Company and shipped all of its copper ore to the Baltimore Copper Works.



Although the mining company had operated with much more efficiency than anyone who had previously worked the mines, the sudden downfall of the price of copper, and the ending of the contract to supply copper sheathing for the boats, ended the actual operating life of the Bare Hills mine for all time.

When Mr. Herbert Brown came into possession of the mine in 1905, he had the intention of resuming operations, but being unable to cope with his adversaries in business, he dismantled all of the mining machinery and sold it.

#### DESCRIPTION OF MINE AT PRESENT TIME

The Bare Hills copper mine is situated on the summit of a ridge immediately west of Jones Falls and about 1 1/2 to 2 miles north of Mt. Washington, in Baltimore County, Md. The last building that was actually of use in mining was burned to the ground several years ago. This building had housed the crusher, boiler, and steam engine. In the accompanying illustration, the concrete foundation can readily be made out.





Also readily noticed are the large steel stay rods that were used to hold the crusher in place. These rods were 2 inches in diameter with large threads at the end where the nuts and washers were placed. This sturdy construction was necessary because of the consistently heavy jarring action of the crusher. No remains can be found of the previously mentioned Cornish pump that had been used to unwater the well.



The main shaft of the mine, pictured above, has already been filled to within a few feet of the top to rid the neighborhood of the danger of anyone falling into it. Some of the timber reinforcing can still be noticed. Judging from what can still be seen of the timber, the shaft must have been at least 10 feet square. No remains



of the tracks out of the shaft can be found. The ventilating shafts were also completely obliterated.



The picture shown above is that of the mine dump where the gangue mineral was thrown after passing through the crusher to remove the ore. Due to not knowing the depth of the dump, an estimation of the amount of waste could not be ascertained. Judging from the size of the predominating lumps of the gangue, the crusher must have done a fairly good job.

The office used by the company when operating from 1900 to 1902 is shown on the following page. When used by the company it was a one room structure, the size being 15 feet square. Since then, however, there have been two additions to the building. The concrete floor, on which the safe stood, is still in the same condition as it was originally. No records of any business transactions

could be found, the records of the old company having been destroyed in the Baltimore fire, and the records of the new company were not preserved.

The office, crushing shack, and main shaft of the mine are all very close to each other, the remains of the shack being 50 feet away from the shaft and the office being 50 feet further away in the same general direction. The mine dump is located right next to the shaft. The only disadvantage in location was that the Baltimore Copper Works, which removed the metal from the ore, was located at Canton, approximately 15 miles away from the mine.

While the work of the mine itself was insignificant as compared with that of the Western mines of today, it doubtless represented, in its day, no mean engineering and financiering ability.





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Photographs and description by author.